

and oxygen. Accordingly, it is necessary to stop water and oxygen as much as possible by forming, e.g., an inorganic barrier layer, which stops gases, on the plastic substrate.

[0019] As described above, it is conventionally difficult to obtain an active matrix type display device in which active elements can be formed with high yield by using a plastic substrate which is light in weight. Therefore, it is being desired to realize an active matrix type display device in which active elements can be formed with higher yield by using a plastic substrate which is light in weight, and realize a method of manufacturing the same.

BRIEF SUMMARY OF THE INVENTION

[0020] A display device according to a first aspect of the invention is a display device comprising:

- [0021] a first plastic substrate;
- [0022] a first adhesion layer formed in a first region of the first plastic substrate, the first region being a region where a pixel region is to be formed thereon;
- [0023] a second adhesion layer formed in a peripheral region outside of the first region of the first plastic substrate;
- [0024] a first thin glass layer formed on the first and second adhesion layers;
- [0025] a plurality of active elements formed on the first thin glass layer in one-to-one relation with a plurality of pixels;
- [0026] a display part formed on the first thin glass layer, the display part corresponding to the pixel region and being driven by the plurality of active elements; and
- [0027] an opposing substrate formed over the display part.

[0028] A display device according to a second aspect of the invention is a display device comprising:

- [0029] a first plastic substrate provided for at least a pixel region;
- [0030] a third plastic substrate provided for a peripheral region outside of the pixel region;
- [0031] an adhesion layer formed at least on the first plastic substrate;
- [0032] a first thin glass layer formed on the adhesion layer;
- [0033] a plurality of active elements formed on the first thin glass layer in one-to-one relation with a plurality of pixels;
- [0034] a display part formed on the first thin glass layer, the display part corresponding to the pixel region and being driven by the plurality of active elements; and
- [0035] an opposing substrate formed over the display part.

[0036] A display device manufacturing method according to a third aspect of the invention comprises:

- [0037] forming active elements in one-to-one relation with pixels on an element formation substrate made of glass;
- [0038] thinning the element formation substrate by polishing after the forming the active elements;
- [0039] bonding the element formation substrate to a plastic substrate via a first adhesion layer in a pixel region and via a second adhesion layer in a peripheral region outside of the pixel region; and
- [0040] opposing the element formation substrate with an opposing substrate to form a display part driven by the active elements and displaying an image in units of pixels.

[0041] A display device manufacturing method according to a fourth aspect of the invention comprises:

- [0042] forming active elements in one-to-one relation with pixels on an element formation substrate made of glass;
- [0043] thinning the element formation substrate by polishing after the forming the active elements;
- [0044] bonding a first plastic substrate to the element formation substrate at least in a pixel region via an adhesion layer, and bonding a third plastic substrate to the element formation substrate or the first plastic substrate in a peripheral region outside of the pixel region via the adhesion layer; and
- [0045] opposing the element formation substrate with an opposing substrate to form a display part driven by the active elements and displaying an image in units of pixels.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0046] FIGS. 1A to 1E are sectional views showing the manufacturing steps of a conventional active matrix type display device step by step;

[0047] FIG. 2A is a plan view of an active matrix type display device according to the first embodiment of the present invention;

[0048] FIG. 2B is a sectional view taken along a line 2B-2B in FIG. 2A;

[0049] FIGS. 3A to 13B are views showing the manufacturing steps of the active matrix type display device according to the first embodiment step by step, in which views having suffix A are plan views, and views having suffix B are sectional views taken along lines designated by numbers suffixed with B in the corresponding plan views;

[0050] FIG. 14A is a plan view showing the element arrangement of the active matrix type display device of the first embodiment;

[0051] FIG. 14B is a sectional view taken along a line 14B-14B in FIG. 14A;

[0052] FIG. 15 is a schematic view for explaining the flexibility of an active matrix type display device of the present invention;